

Cumulative Minimum Credits Required for Award of Certificate; Diploma; Degree			Subject I		Subject II		Vocational		Co-curricular		Audit Course*		Research Project**		Min. Credits (Year)												
			Major (Core)		Minor		Minor		Minor		Compulsory		Major														
			4/5/6Credits		4/5/6 Credits		3 Credits		2 Credits		Non-credits		3/6/8 Credits														
			Own Faculty		Any Faculty (Multidisciplinary)		Vocational/ Skill Development Course		Co-curricular (Q)		Audit Course (Q & NC)		Inter/Intra Faculty														
40 Certificate in Bioorganic and Chemical Analysis	Year	Sem.	B020101T/CH151: Fundamentals of Chemistry-I (T-4)				•B000101V/CH137 Plastic Waste Management OR •MOOCs/SWAYAM etc. (T+P=3)	Z010101T/BE105 Food, Nutrition and Hygiene (T-2)	A050101T/HM101 Rashtra Gaurav					40 (First)													
			B020102T/CH152: Fundamentals of Chemistry-II (T-4)																								
			• B020103P/CH153: Quantitative Measurement (P-2) • B020104P/CH154: Analytical Testing (P-2)																								
			B020201T/CH155: Bioorganic Chemistry (T-4)																								
	1	I	B020202T /CH156: Material Science and Technology (T-4)			• B030202T/MT148: Basic Mathematics & Statics OR • A040209T/LN109: Basics of Communication OR • EVS/BS (4+2=6)	•B000201V/CH144 Laboratory Safety & Sample Handling OR •MOOCs/SWAYAM etc. (T+P=3)	Z020201T/NS110 First Aid and Health (T-2)	B020205T/CH159 Advanced Application of Artificial Intelligence in Chemical Sciences																		
			• B020203P/CH157: Biochemical Testing (P-2) • B020204P/CH158: Material Analysis (P-2)																								
			B020202T /CH156: Material Science and Technology (T-4)																								
			• B020203P/CH157: Biochemical Testing (P-2) • B020204P/CH158: Material Analysis (P-2)																								
40+40=80 Diploma in Chemical Dynamics and Analytical Techniques	2	III	B020301T/CH251 : Chemical Dynamics and Coordination (T-4)				•B000301V/CH237 Food Testing and Quality Control OR •MOOCs/SWAYAM etc. (T+P=3)	Regional Language*** (T-2)						40 (Second)													
			B020302T/CH252: Industrial Chemical Analysis (T-4)																								
			• B020303P/CH253: Physical Analysis and Testing (P-2) • B020304P /CH254: Industrial Chemical Testing (P-2)																								
			B020401T/CH255: Quantum Mechanics and Analytical Methods (T-4)																								
	2	IV	B020402T /CH256: Process in Organic Chemistry (T-4)			• B030402T/MT237: Numerical Analysis & Testing of Hypothesis OR • A040405T/LN234: Effective Professional Communication Skills OR • EVS/BS (4+2=6)		Z040401T/PH201 Physical Education and Yoga (T-2)																			
			• B020403P/CH257: Instrumental Analysis and Testing (P-2) • B020404P/CH258: Methods in Organic Synthesis (P-2)																								
			B020402T /CH256: Process in Organic Chemistry (T-4)																								
			• B020403P/CH257: Instrumental Analysis and Testing (P-2) • B020404P/CH258: Methods in Organic Synthesis (P-2)																								
3-Year Single Subject with Honours UG Degree																											
80+50=130 (120) 3-Year B.Sc. Honours in Chemistry	3	V	Compulsory	B020501T/CH337: Organic Synthesis-A (T-4)											50 (Third)												
				B020502T/CH338: Rearrangements and Chemistry of Group Elements (T-4)																							
				• B020503P/CH339: Qualitative Analysis (P2) • B190503P/CH333: Industrial Chemicals and Pollution Management (P2)																							
				(Combination 01)																							
				B190503T/CH341: Water Treatment Analysis and Management (T-4)																							
				B190504T/CH342: Green Chemistry: Principles and Applications(T-4)																							
				(Combination 02)																							
				B190505T/CH334: Industrial Aspects of Chemistry (T-4)																							
			Choose Any One	B190506T/CH335: Food and Dairy Chemistry (T-4)																							
				(Combination 03)																							
				B190501T/CH331 : Industrial Chemicals (T-4)																							
				B190502T/CH332: Pollution, its Management, and Industrial Economics (T4)																							
				Compulsory	B020601T/CH353: Organic Synthesis-B (T-4)																					B020604R/CH356 Chemistry Research Project-2 (R-5)	
					B020602T/CH354: Chemical Energetics and Radiochemistry (T-4)																						
					• B020603P/CH355: Analytical Methods (P-2) • B190603P/CH343: Synthesis and Analysis of Polymers (P-2)																						
					(Combination 01)																						
Choose Any One	B020605T/CH357: Organometallic and Supramolecular Chemistry(T-4)																										

			<b>B020606T/CH358: Nanoscience and petrochemicals (T-4)</b> <b>(Combination 02)</b> <b>B020607T/CH359: Photochemistry (T-4)</b> <b>B020608T/CH360: Pericyclic Chemistry (T-4)</b> <b>(Combination 03)</b> <b>B020609T/CH361: Dyes and Agrochemicals (T-4)</b> <b>B020610T/CH362: Drug Chemistry and Pharmacology (T-4)</b>			
<b>4-Year UG Degree with Honours (&lt;75% Marks)</b>						
<b>130+40=170</b> <b>(160) 4-Year B.Sc.</b> <b>in Chemistry with</b> <b>Honours</b>	4	<b>VII</b> <b>B020701T/CH431: Inorganic &amp; Material Chemistry (T-4)</b> <b>B020702T/CH432: Organic &amp; Physical Chemistry (T-4)</b> <b>B190701T/CH433: Concepts of Environmental Chemistry (T-4)</b> <b>B190702T/CH434 : Analytical Techniques in Chemistry (T-4)</b> <ul style="list-style-type: none"> <li><b>B020703P/CH435: Chemistry Laboratory-I (P-2)</b></li> <li><b>B190703P/CH437: Industrial Chemistry Laboratory-I (P-2)</b></li> </ul>	<b>B020801T/CH445: Pharmaceutical Chemistry of Natural Products (T-4)</b> <b>B020802T/CH446: Organo-transition Metal Chemistry (T-4)</b> <b>B020803T/CH447: Surface Electrochemistry (T-4)</b> <b>B020804T/CH448: Computational Methods in Chemistry (T-4)</b> <ul style="list-style-type: none"> <li><b>B020805P/CH449: Chemistry Laboratory-II (P-2)</b></li> <li><b>B190805P/CH443: Industrial Chemistry Laboratory-II (P-2)</b></li> </ul>			<b>40</b> <b>(Fourth)</b>
<b>4-Year UG Degree with Honours &amp; Research (≥75% Marks)</b>						
<b>130+40=170</b> <b>(160) 4-Year</b> <b>B.Sc.</b> <b>in Chemistry with</b> <b>Honours &amp; Research</b>	4	<b>VII</b> <b>B020701T/CH431: Inorganic &amp; Material Chemistry (T-4)</b> <b>B020702T/CH432: Organic &amp; Physical Chemistry (T-4)</b> <ul style="list-style-type: none"> <li><b>B190701T/CH433: Concepts of Environmental Chemistry OR</b></li> <li><b>B190702T/CH434: Analytical Techniques in Chemistry (T-4)</b></li> <li><b>B020703P/CH435: Chemistry Laboratory-I (P-2)</b></li> <li><b>B190703P/CH437: Industrial Chemistry Laboratory-I (P-2)</b></li> </ul>	<b>B020801T/CH445: Pharmaceutical Chemistry of Natural Products (T-4)</b> <b>B020802T/CH446: Organo-transition Metal Chemistry (T-4)</b> <ul style="list-style-type: none"> <li><b>B020803T/CH447: Surface Electrochemistry OR</b></li> <li><b>B020804T/CH448: Computational Methods in Chemistry (T-4)</b></li> <li><b>B020805P/CH449: Chemistry Laboratory-II (P-2)</b></li> <li><b>B190805P/CH443: Industrial Chemistry Laboratory-II (P-2)</b></li> </ul>	<b>B020704R/CH438</b> <b>Chemistry Research</b> <b>Project-3</b> <b>(R-4)</b>	<b>B020804R/CH450</b> <b>Chemistry Research</b> <b>Project-4</b> <b>(R-4)</b>	<b>40</b> <b>(Fourth)</b>
<b>One-Year PG Degree</b>						
<b>170+40=210</b> <b>(200)</b> <b>M.Sc.</b> <b>in Chemistry</b>	5	<b>IX</b> <b>B020901T/CH536: Heterocyclic Chemistry, Organic Reaction &amp; Reagents (T-4)</b> <b>B020902T/CH537: Concepts in Quantum &amp; Supra Molecular Chemistry (T-4)</b> <b>B020903T/CH538: Polymer, Petroleum, Fertilizer &amp; Food Chemistry (T-4)</b> <ul style="list-style-type: none"> <li><b>B020904P/CH539: Advance Chemistry Laboratory-I (P-2)</b></li> <li><b>B190904P/CH534: Advance Industrial Chemistry Laboratory-I (P-2)</b></li> </ul>	<ul style="list-style-type: none"> <li><b>B021001T/CH548: Concepts in Green Chemistry OR</b></li> <li><b>B021002T/CH549: Concepts in Drug Chemistry (T-4)</b></li> <li><b>B021003T/CH550: Modern Analytical Techniques in Chemistry OR</b></li> <li><b>B021004T/CH551: Intellectual Property Rights (T-4)</b></li> <li><b>B021005T/CH552: Chemistry Seminar (T-4)</b></li> <li><b>B021006P/CH553: Advance Chemistry Laboratory-II (P-2)</b></li> <li><b>B191005P/CH546: Advance Industrial Chemistry Laboratory-II (P-2)</b></li> </ul>	<b>B020905R/CH540</b> <b>Chemistry</b> <b>Research Project-5</b> <b>(R-4)</b>	<b>B021007R/CH554</b> <b>Chemistry Research</b> <b>Project-6</b> <b>(R-4)</b>	<b>40</b> <b>(Fifth)</b>

- ✓ T-4 = Theory with 4 credits; P-2 = Practical with 2 credits; R = Research Project with 4 credits; Q: Qualifying; NC = Non-Credit; **MOOCs = Massive Online Open Courses**
- ✓ Co-curricular courses offered by UP higher education.
- ✓ Vocational courses offered by respective Department/University
- ✓ \*Audit Courses: The respective Department/University offers Rashtra Gaurav and X+AI (Advanced Application of Artificial Intelligence in Chemical Sciences) as compulsory **Non-Credit** courses. All students will have to pass these courses for obtaining a Certificate, Diploma, Undergraduate Degree, or Undergraduate Honors Degree with Research only once.
- ✓ 01, 02, and 03 combinations are elective papers, out of which students must choose any one with a minimum of ten students' strengths.
- ✓ For entry into the 4-Year UG Degree with Honours and Research program, students must secure ≥75% marks in the 3-Year UG Degree program.
- ✓ Students with a 3-Year Single Subject with Honours UG Degree below 75% marks in the 3-Year UG Degree program go for a two-year PG program.
- ✓ \*\*Research Project/Dissertation/Internship/Field or Survey Work etc.
- ✓ \*\*\*Regional Language is a co-curricular course offered by the respective Department or University in the third semester, such as Hindi, Urdu, Awadhi, Sanskrit, etc.